THE CLAIMS

What is claimed is:

1. A method of producing an angiospermous apomictic plant that exhibits an increased genetic stability for apomixis compared to an apomictic parent plant from which the apomictic plant is produced, the method comprising:

producing a facultatively apomictic parent plant by selecting and hybridizing sexual angiospermous plants having divergent reproductive schedules of ovule development; and

doubling the chromosome number of the apomictic parent plant, thereby producing an angiospermous apomictic plant with increased genetic stability for apomixis.

2. The method of claim 1, wherein the step of doubling the chromosome number comprises treating the parent plant with a spindle inhibitor.

3. The method of claim 2, wherein the spindle inhibitor comprises colchicine.

4. The method of claim 1, wherein the step of doubling the chromosome number comprises culturing the parent plant in tissue culture.

5. The method of claim 1, wherein the step of doubling the chromosome number is accomplished by B_{III} hybridization.

6. The method of claim 1, wherein the parent plant exhibits incomplete meiotic chromosome pairing such that meiotic chromosome pairing among the chromosomes of the resulting chromosome-doubled apomictic plant occurs within rather than among duplicated pairs of chromosomes.

7. The method of claim 1, wherein the parent plant is either an interspecific hybrid, so that the corresponding chromosome doubled plant is an allopolyploid, or an interracial hybrid, so that the corresponding chromosome doubled plant is a segmental allopolyploid.

8. The method of claim 1, further comprising the step of genetically modifying the apomictic plant to produce an apomictic plant in which female meiosis aborts.

9. The method of claim 8, wherein the step of genetically modifying the apomictic plant is accomplished by hybridization with a plant containing a meiotic mutant.

10. The method of claim 8, wherein the step of genetically modifying the apomictic plant is accomplished by hybridization with a plant of a different ploidy level so that the apomictic plant produced is of an odd ploidy level.

11. An apomictic plant exhibiting increased apomixis stability produced according to the method of claim 1, or apomictic progeny obtained from the apomictic plant.

12. The apomictic plant of claim 11, wherein the plant is an allopolyploid, segmental allopolyploid, or autopolyploid.

13. A method of producing an angiospermous apomictic plant that exhibits an increased genetic stability for apomixis compared to an apomictic parent plant from which the apomictic plant is produced, the method comprising:

producing a facultatively apomictic parent plant by selecting and hybridizing sexual angiospermous plants having divergent reproductive schedules of ovule development; and

genetically modifying the parent plant so that female meiosis is aborted, thereby producing an angiospermous apomictic plant with increased genetic stability for apomixis.

14. The method of claim 13, wherein the step of genetically modifying the parent plant is accomplished by hybridization with a plant containing a meiotic mutant.

15. The method of claim 13, wherein the step of genetically modifying the parent plant is accomplished by hybridization with a plant of a different ploidy level so that the apomictic plant produced is of an odd ploidy level.

16. The method of claim 13, wherein the step of genetically modifying the parent plant is accomplished by B_{III} hybridization.

17. The method of claim 13, wherein the step of genetically modifying the parent plant is accomplished by transforming the parent plant with a promoter/gene construct that inhibits female meiosis.

18. The method of claim 13, further comprising the step of doubling the chromosome number of the apomictic parent plant.

19. An apomictic plant exhibiting increased apomixis stability produced according to the method of claim 13, or apomictic progeny obtained from the apomictic plant.

20. The apomictic plant of claim 19, wherein the plant is an allopolyploid, segmental allopolyploid, or autopolyploid.

21. A method of producing angiospermous apomictic plants that exhibit an increased genetic stability for apomixis compared to an apomictic parent plant from which the apomictic plant is produced, the method comprising:

selecting a group of facultative apomictic angiospermous parent plants;

measuring the degree of apomixis stability for each parent plant from the group;

selecting a subset of plants comprising those that express the highest levels of genetic stability from the group of parent plants; and

genetically modifying the plants in the subset so that female meiosis is aborted or doubling the chromosome number of the plants in the selected subset, thereby producing angiospermous apomictic plants with increased genetic stability for apomixis.

22. The method of claim 21, further comprising the step of measuring the degree of apomixis stability of the apomictic plant produced.

23. The method of claim 21, wherein the step of doubling the chromosome number is accomplished by B_{III} hybridization or by treating with a spindle inhibitor.

24. An apomictic plant exhibiting increased apomixis stability produced according to the method of claim 21, or apomictic progeny obtained from the apomictic plant.

25. The apomictic plant of claim 24, wherein the plant is an allopolyploid, segmental allopolyploid, or autopolyploid.

26. The method of claim 21, wherein the step of genetically modifying the parent plant is accomplished by hybridization with a plant containing a meiotic mutation gene or by hybridization with a plant with a different ploidy level so that the apomictic plant produced is of an odd ploidy level.

27. The method of claim 21, wherein the step of genetically modifying the parent plant is accomplished by transforming the parent plant with a promoter/gene construct that inhibits female meiosis.

28. A method of producing an angiospermous apomictic plant that exhibits an increased genetic stability for apomixis compared to an apomictic parent plant from which the apomictic plant is produced, the method comprising:

selecting a facultatively apomictic angiospermous parent plant;

measuring the degree of apomixis stability of the parent plant;

genetically modifying the parent plant so that female meiosis is aborted, thereby producing an angiospermous apomictic plant with increased genetic stability for apomixis; and

measuring the degree of apomixis stability of the resulting apomictic plant to verify that apomixis stability has been increased.

29. A method of producing a genetically stabilized angiospermous apomictic plant, the method comprising:

selecting two sexual angiospermous plants having divergent reproductive schedules of ovule development;

doubling the chromosome number of at least one of the sexual plants; and

hybridizing the two sexual plants to produce an angiospermous apomictic plant with increased genetic stability for apomixis.

30. The method of claim 29, wherein the step of doubling the chromosome number comprises treating the selected sexual plant with a spindle inhibitor.

31. The method of claim 30, wherein the spindle inhibitor comprises colchicine.

32. The method of claim 29, wherein the step of doubling the chromosome number comprises culturing the selected sexual plant in tissue culture.

33. The method of claim 29, wherein the step of doubling the chromosome number is accomplished by B_{III} hybridization.

34. The method of claim 29, further comprising the step of genetically modifying the apomictic plant to produce an apomictic plant in which female meiosis aborts.

35. The method of claim 34, wherein the step of genetically modifying the apomictic plant is accomplished by hybridization with a plant containing a meiotic mutant.

36. The method of claim 34, wherein the step of genetically modifying the apomictic plant is accomplished by hybridization with a plant of a different ploidy level so that the apomictic plant produced is of an odd ploidy level.

37. A genetically stabilized angiospermous apomictic plant produced according to the method of claim 29, or apomictic progeny obtained from the apomictic plant.

38. The apomictic plant of claim 37, wherein the plant is an allopolyploid, segmental allopolyploid, or autopolyploid.